PTO 2009-3209

Japanese Unexamined (*Kokai*) Patent Publication No. 2000-210048, published August 2, 2000; Application No. H11-12170, filed January 20, 1999; Inventors: Toru UMETSU, Yoshimitsu MORI, and Takeshi KAMISHINA; Assignee: Q.P. Corporation

OIL-IN-WATER EMULSIFIED CONDIMENT CONTAINING BUBBLES

[Claims]

[Claim 1]

Oil-in-water emulsified condiment containing bubbles characterized in that egg yolk lipoprotein and a protein other than the aforementioned egg yolk lipoprotein, which causes acid denaturation at a pH of 3.0 – 5.0 are added; the overall viscosity is 100,000 – 1,000,000 mPa · s, the pH is 3.0 – 5.0, and the specific gravity is 80 – 98% of the deaerated oil-in-water emulsified condiment, and nitrogen causes bubbles to be contained.

[Claim 2]

Oil-in-water emulsified condiment containing bubbles listed in Claim 1, wherein 1.5 – 7.5% by weight of the egg yolk lipoprotein and 0.2 – 0.8% by weight of the protein other than the aforementioned egg yolk lipoprotein, which causes acid denaturation at a pH of 3.0 – 5.0 are added to the product.

[Claim 3]

Oil-in-water emulsified condiment containing bubbles listed in Claims 1 and 2, wherein all or part of the egg yolk lipoprotein is an egg yolk lysophospholipoprotein.

[Claim 4]

Oil-in-water emulsified condiment containing bubbles listed in Claim 3, wherein the content of the egg yolk lysophospholipoprotein in the egg yolk lipoprotein is 10% by weight or more of the entire egg yolk lipoprotein.

[Detailed Explanation of the Invention]

[0001]

[Technological Field Pertaining to the Invention]

The present invention concerns an oil-in-water emulsified condiment containing bubbles wherein the light texture immediately after manufacturing and flavor can be preserved over a long term.

[0002]

Mayonnaise and salad dressings are representative products of oil-in-water emulsified condiments. However, in recent years, as flavors have diversified, there has been a trend in that items having a lighter texture than conventionally available products have been desired.

[0003]

In Japanese Unexamined (*Kokai*) Patent Publication No. H3-228633, to respond to these types of changes in flavor, an oil-in-water emulsified condiment wherein bubbles are added and which has a lighter texture than the conventional product is offered. However, with this oil-in-water emulsified condiment containing bubbles, while it does have a light texture immediately after manufacturing due to eth fact that bubbles are contained, because it is later difficult to preserve the stability of the bubbles when left over a long term, there has been the problem that the light texture immediately after manufacturing cannot be maintained.

[0004]

The objective of the present invention is thus to offer an oil-in-water emulsified condiment containing bubbles wherein the light texture immediately after manufacturing and flavor can be preserved over a long term.

[0005]

[Means for Resolving Problems]

As a result of diligent research to achieve the aforementioned objective, the present invention have arrived at completing the present invention. More specifically, (1) an oil-in-water emulsified condiment containing bubbles characterized in that egg yolk lipoprotein and a protein other than the aforementioned egg yolk lipoprotein, which causes acid denaturation at a pH of 3.0 – 5.0 are added; the overall viscosity is 100,000 – 1,000,000 mPa · s, the pH is 3.0 – 5.0, and the specific gravity is 80 – 98% of the deaerated oil-in-water emulsified condiment, and nitrogen causes bubbles to be contained; (2) the oil-in-water emulsified condiment containing bubbles of (1), wherein 1.5 – 7.5% by weight of the egg yolk lipoprotein and 0.2 – 0.8% by weight of the protein other than the aforementioned egg yolk lipoprotein, which causes acid denaturation at a pH of 3.0 – 5.0 are added to the product; (3) the oil-in-water emulsified condiment containing bubbles of (1) and (2), wherein all or part of the egg yolk lipoprotein is an egg yolk lysophospholipoprotein; and (4) the oil-in-water emulsified condiment containing bubbles of (3), wherein the content of the egg yolk lysophospholipoprotein in the egg yolk lipoprotein is 10% by weight or more of the entire egg yolk lipoprotein, is offered.

[0006]

The oil-in-water emulsified condiment containing bubbles in the present invention refers to a condiment wherein edible oils and fats are uniformly dispersed and an emulsified state is maintained. Representative products that can be cited include mayonnaise, salad dressings, and the like. With these types of oil-in-water condiments, generally, 20 – 90% by weight of oils and fats are contained, and the content of edible oils and fats in the present invention is the same. Also, as long as the oils and fats used in the present invention are oils and fats generally used in oil-in-water emulsified condiments, there is no particular limitation; animal and vegetable oils such as corn oil, cottonseed oil, safflower oil, olive oil, soybean oil, coconut oil, palm oil, fish oil, and the like; oils and fats obtained by chemical processing such as salad oil, MCT (medium chain fatty acid esters), and the like may be cited.

[0007]

The present invention is an oil-in-water emulsified condiment containing bubbles wherein the bubbles are uniform overall; the size of the bubbles is the same as those of general foods that are whipped; normally, this size is several microns to several thousand microns. Also, with the present invention, nitrogen is used as the gas in the bubbles. As shown in the test examples discussed below, when gases other than nitrogen such as carbon dioxide gas are used, or when air alone is used, with the flavor, there is no problem immediately after manufacturing, but when left for a long period, the flavor immediately after manufacturing is not maintained, and this is not preferable. It is preferable for the purity of the nitrogen to be 100% by volume, but if the purity is about 90% by volume, there is no problem.

[0008]

The egg yolk lipoprotein in the present invention is a composite body present as a main component of the egg yolk, comprised of a component such as a phospholipid, a cholesterol, a triglyceride, an egg yolk protein, and the like, but with the present invention, additionally, an egg yolk lysolipoprotein, wherein the egg yolk lipoprotein is processed with phospholipase A, which is a phospholipid-decomposing enzyme; either the primary or secondary ester bonds of the phospholipid are decomposed, and a composite body in the state of a lysophospholipid and a fatty acid is formed; and a pressurized or heated and denatured item wherein the egg yolk lipoprotein is processed with a protein-degrading enzyme, and the like are contained. Regarding the egg yolk lipoprotein used in the present invention, egg yolk in an unchanged state used as an ingredient in normal emulsified foods may be used in the present invention, a liquid having undergone the processes described above, or a dried item wherein these liquids are spray-dried, freeze-dried, or the like, or a dried item that has been dehydrated, may be used.

[0009]

Regarding the egg yolk lipoprotein used in the present invention, it is preferable for part or all to be an egg yolk lysolipoprotein, and it is also preferable for the egg yolk lysolipoprotein in the egg yolk lipoprotein to be 10% or greater. The reason for this is that, as explained in the test example below, using an item wherein part all of the egg yolk lipoprotein is an egg yolk lysolipoprotein is preferable for maintaining the light texture immediately after manufacturing even when left for a long term; also, when the percentage of egg yolk lysolipoprotein used is 10% or more of the egg yolk lipoprotein,

the light texture immediately after manufacturing is obtained, and the light texture immediately after manufacturing can be maintained over a long term.

[0010]

In order for part or all of the egg yolk lipoprotein to be an egg yolk lysolipoprotein, for example, there is a method wherein phospholipase A is caused to act on the egg yolk liquid and, at a desired point, the reaction is caused to end; a method wherein an egg yolk liquid, wherein the entire egg yolk lipoprotein is used as an egg yolk lysolipoprotein with phospholipase A, and an unprocessed egg yolk liquid are mixed at optional percentages; and the like.

[0011]

With the present invention, proteins other than egg yolk lipoproteins which cause acid denaturation at a pH in the range of 3.0 – 5.0 are those which easily cause acid denaturation, for example, egg white protein, casein and salts thereof, soy protein, wheat protein, and the like. Egg white protein, which easily makes bubbles and whose bubbles are stable, is preferable. As shown in the test example discussed below, only with milk serum protein, which causes acid denaturation at a pH of 3.0 – 5.0, having the light texture immediately after manufacturing is problematic, and the light texture immediately after manufacturing cannot be maintained, so this is not preferable.

[0012]

With the present invention, adding 1.5 – 7.5% by weight and 0.2 – 0.8% by weight respectively of the egg yolk lipoprotein described above and a protein other than an egg yolk lipoprotein causing acid denaturation at a pH or 0.3 – 0.5 is preferable since

the light texture directly after manufacturing can be better maintained even when left for a long term.

[0013]

The entire viscosity of the oil-in-water emulsified condiment containing bubbles of the present invention is 100,000 mPa · s If the viscosity is lower than this, as shown in the test example explained below, the light texture directly after manufacturing cannot be maintained over a long term, and this is not preferable. If the overall viscosity is 1,000,000 mPa · s or less, even if it is large, the viscosity for maintaining the light texture directly after manufacturing becomes too high, and this is not preferable as an oil-in-water emulsified condiment. The viscosity of the present invention is the viscosity wherein, after 200 ml of the oil-in-water emulsified condiment containing bubbles of the present invention are filled in a beaker, using a T-Bar Spindle D rotor with a B-type viscometer with a Helipath Stand (manufactured by Tokyo Keiki), the product temperature is approximately 20°C and rotation occurs for one minute at 2 rpm.

[0014]

The pH of the product of the present invention is 5.0 or less. If the pH is higher than this, as shown in the test example described below, the texture immediately after manufacturing cannot be maintained, and this is not preferable. If the pH is 3.0 or greater, even if it is smaller, the flavor of the manufactured objective product becomes too sour, and this not preferable as an oil-in-water emulsified condiment. There is no particular limitation regarding the method for making the pH 5.0 or less with the present invention, but, for example, organic acids such as acetic acid, lactic acid, malic acid, citric acid, maleic acid, fumaric acid, succinic acid, adipic acid, or the like, or acid materials with

these as the main component, such as vinegar, fermented lactic acid, apple vinegar, lemon water, or the like may be used.

[0015]

The specific gravity of the product of the present invention is 80 – 98%, preferably 85 – 96%, with respect to a deaerated oil-in-water emulsified condiment. As shown in the test example discussed below, if it is less than 98%, even when it contains bubbles, the texture immediately after manufacturing is not light, so this is not preferable; at greater than 80%, the light texture immediately after manufacturing cannot be maintained, so this is not preferable. The ratio of the specific gravity to the deaerated product was calculated based on the specific gravity when a 3-liter female cylinder for measurement was used, and the product temperature was approximately 20°C.

[0016]

Various food ingredients other than those described above may be suitable selected and added to the oil-in-water emulsified condiment containing bubbles of the present invention, to the extent that the effects of the present invention are not lost. For example, various seasonings such as monosodium glutamate, sugar, table salt, miso, soy sauce, unrefined sake, fermented bean paste, and the like; thickeners such as xanthan gum, locust bean gum, gellan gum, tamarind seed gum, starches, chemically modified starches, and the like; spices such as mustard powder, and the like; various shellfish materials and paste-like materials; and the like may be cited.

[0017]

The oil-in-water emulsified condiment containing bubbles of the present invention is an emulsified condiment that is preferable wherein an egg yolk lipoprotein

and a protein other than the aforementioned egg yolk lipoprotein, which causes acid denaturation at a pH of 3.0 – 5.0 are added; the overall viscosity is 100,000 – 1,000,000 mPa · s, the pH is 3.0 – 5.0, and the specific gravity is 80 – 98% of the deaerated oil-in-water emulsified condiment, and nitrogen causes bubbles to be contained; and the light texture immediately after manufacturing and flavor can be preserved over a long term.

[0018]

The present invention is explained in further detail below based on embodiments and test examples. The present invention is not limited thereto.

[0019]

[Embodiments]

[Embodiment 1]

While 10 kg of egg yolk liquid, wherein approximately 30% by weight of the egg yolk lipoprotein was egg yolk lysolipoprotein; 7.0 kg of purified water; 4.5 kg of raw egg whites; 4.5 kg of vinegar (acidity: 13.5% by weight); 1.8 kg of table salt; 1.7 kg of superfine sugar; and 0.5 kg of mustard powder were successively placed in a blender, nitrogen (purity: 99% or greater by volume) was blown into the container and this was stirred; bubbles were caused to be contained, and the item was made uniform. Then, while the blowing in of the nitrogen was continued, 70 kg of salad oil were gradually added, and while bubbles were caused to be contained, rough emulsification was carried out. Then, after the roughly emulsified substance containing bubbles was immediately passed through a colloidal mill, finished, and emulsified, it was filled and hermetically sealed in a 300-ml capacity tube.

[0020]

The obtained oil-in-water emulsified condiment containing bubbles had a lighter texture than a product manufactured without blowing in nitrogen, and the light texture immediately after manufacturing and flavor were maintained after being preserved at room temperature for two months.

[0021]

[Embodiment 2]

28.7 kg of an aqueous solution wherein 3.0 kg of chemically modified starch (alpha-formed chemically modified starch manufactured by the Oji National Co., Ltd., product name: Instant Clear Gel), 0.2 kg of xanthan gym, and 0.1 kg of tamarind seed gum were dissolved in purified water; 10 kg of an egg yolk liquid, wherein about 30% by width of the egg yolk lipoprotein was egg yolk lysolipoprotein; 7.0 kg of raw egg whites; 6.1 kg of vinegar (acidity: 13% by weight); 4.7 kg of superfine sugar; 3.0 kg of table salt; and 0.5 kg of monosodium glutamate were successively placed in a blender, nitrogen (purity: 99% or greater by volume) was blown into the container and this was stirred; bubbles were caused to be contained, and the item was made uniform. Then, while the blowing in of the nitrogen was continued, 40 kg of salad oil were gradually added, and while bubbles were caused to be contained, rough emulsification was carried out. Then, after the roughly emulsified substance containing bubbles was immediately passed through a colloidal mill, finished, and emulsified, it was filled and hermetically sealed in a 300-ml capacity tube.

[0022]

The obtained oil-in-water emulsified condiment containing bubbles had a lighter texture than a product manufactured without blowing in nitrogen, and the light texture

immediately after manufacturing and flavor were maintained after being preserved at room temperature for two months. In the product, the egg yolk lipoprotein (of which 30% by weight was egg yolk lysolipoprotein) was 5% by weight and the egg white protein was 0.7% by weight. The overall viscosity was approximately 240,000 mPa · s, the pH was 4.1, and the specific gravity was 91% with respect to the product manufactured while deaerating.

[0023]

[Test Examples]

[Test Example 1]

To examine the temporal changes of the flavor based on the type of gas for causing bubbles to be contained, in place of the nitrogen in Embodiment 1, an item using carbon dioxide gas (Comparative Product No. 1) and an item using air (Comparative Product No. 2) were manufactured, and these were compared to an item obtained with Embodiment 1 (Inventive Product No. 1). The test was maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated.

[0024]

[Table 1]

	Type of gas	Change of flavor
Inventive Product No. 1	Nitrogen	Almost no change
Comparative Product No. 1	Carbon dioxide gas	Increase in acidic taste
Comparative Product No. 2	Air	Oils and fats were slightly denatured and scattered

[0025]

Based on Table 1, it can be seen that if nitrogen is not used as the type of gas for causing bubbles to be contained, the flavor immediately after manufacturing cannot be maintained over a long term. Compared to a product manufactured by deaerating and not blowing any gas, the product wherein various gases are blown has a light texture directly after manufacturing, and the light texture directly after manufacturing was maintained for two months when preserved at room temperature.

[0026]

[Test Example 2]

To examine temporal changes in texture when an egg yolk lipoprotein is used and when one is not used, with Embodiment 1, instead of the egg yolk lipoprotein used in Embodiment 1, almost the same quantity of an egg yolk phospholipid (manufactured by the Q.P. Corporation, product name: Egg Yolk Lecithin PL-100H) present in the egg yolk lipoprotein was used; for the shortfall, an item wherein pure water was added (Comparative Example No. 3) was manufactured. This, and the item manufactured with Embodiment 1 (Inventive Product No. 1) were compared. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast.

[0027]

[Table 2]

	Addition of egg yolk lipoprotein	Temporal change in texture
Inventive Product No. 1	Added	◎

Comparative Product No. 1	Not added	×

[0028]

Note 1: Symbols in tables

◎: Light texture or somewhat light texture maintained before and after preservation

○: The light texture or somewhat light texture before preservation changes slightly after preservation, but this is not problematic

△: There is a light texture before preservation, but after preservation this changes to a somewhat light texture

×: Both before and after preservation, the texture is identical to that of the negative contrast

[0029]

From Table 2, it can be seen that if an egg yolk lipoprotein is not added and the item is left for a long term, the light texture immediately after manufacturing cannot be maintained.

[0030]

[Comparative Example 3]

To examine temporal changes in texture when a protein other than an egg yolk lipoprotein causing acidity at a pH of 3.0 – 5.0 is used and when this is not used, with Embodiment 1, instead of the raw egg white used in Embodiment 1, almost the same quantity of a milk serum protein was used. For the shortfall, an item wherein pure water was added (Comparative Example No. 4) was manufactured. This, and the item

manufactured with Embodiment 1 (Inventive Product No. 1) were compared. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[0031]

[Table 3]

	Addition of acid-denaturing protein	Temporal change in texture
Inventive Product No. 1	Added	◎
Comparative Product No. 4	Not added	×

[0032]

From Table 3, it can be seen that if an acid-denaturing protein is not added and the item is left for a long term, the light texture immediately after manufacturing cannot be maintained. With each preserved item, the flavor immediately after manufacturing was maintained.

[0033]

[Test Example 4]

To examine temporal changes in the texture based on the finishing viscosity, items wherein the rotational frequency and clearance of the colloidal mill used for the manufacturing in Embodiment 1 were changed, having the viscosity shown in Table 4 (Comparative Product No. 5 and Inventive Products No. 2 – 5), as well as high-viscosity

items with an added chemically modified starch (product name: Instant Clear Gel) in the rough emulsification stage (Inventive Products No. 6 – 7, Comparative Product No. 6) were respectively manufactured and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

	Finishing viscosity (mPa · s)	Temporal change in texture
Comparative Product No. 5	70,000	×
Inventive Product No. 2	100,000	○
Inventive Product No. 3	150,000	◎
Inventive Product No. 4	210,000	◎
Inventive Product No. 5	480,000	◎
Inventive Product No. 6	760,000	◎
Inventive Product No. 7	1,000,000	◎
Comparative Product No. 6	1,210,000	◎

[0035]

From Table 4, it can be seen that if the finishing viscosity is 100,00 mPa · s or greater and the item left for a long term, the light texture immediately after manufacturing cannot be maintained. For each item, the flavor immediately after manufacturing was maintained, but the viscosity of Comparative Product No. 6 was too high, and was not preferable for an oil-in-water emulsified condiment.

[0036]

[Test Example No. 5]

To examine temporal changes in the texture based on the finishing pH, the added quantity of vinegar in Embodiment 1 was changed, and items with the pH shown in Table 5 were respectively manufactured and evaluated. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[0037]

[Table 5]

	Finishing pH	Temporal change in texture
Comparative Product No. 7	5.5	△
Inventive Product No. 8	5.0	○
Inventive Product No. 9	4.6	◎
Inventive Product No. 10	3.8	◎
Inventive Product No. 11	3.0	◎
Comparative Product No. 8	2.7	◎

[0038]

From Table 5, it can be seen that if the finishing pH is 0.5 or less, and the item is left for a long term, the light texture immediately after manufacturing cannot be maintained. For each item, the flavor immediately after manufacturing was maintained, but the flavor of Comparative Product No. 6 was too sour, and was not preferable.

[0039]

[Comparative Example No. 6]

To examine temporal changes in the texture based on the difference of the specific gravity, the rotational frequency of the blender and stirring time in the rough emulsification stage in Embodiment 1 were changed, and respectively shown in Table 6 (percentage of specific gravity related to a manufactured product wherein nitrogen gas was not blown while deaerating). For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[Table 6]

	Percentage of specific gravity related to deaerated product	Temporal change in texture
Comparative Product No. 9	99%	×
Inventive Product No. 12	98%	○
Inventive Product No. 13	96%	◎
Inventive Product No. 14	92%	◎
Inventive Product No. 15	85%	◎
Inventive Product No. 16	80%	○
Comparative Product No. 10	75%	△

[0041]

From Table 6, it can be seen that if the percentage of the specific gravity is not in the range of 80 – 98%, and the item is left for a long term, the light texture immediately after manufacturing cannot be maintained. In particular, it can be seen that 85 – 96% is

preferable to maintain the light texture immediately after manufacturing. For each item, the flavor immediately after manufacturing was maintained.

[0042]

[Embodiment 7]

To examine temporal changes in the texture based on the quantity of added egg yolk lipoprotein, the added quantities of the egg yolk liquid in Embodiment 1 were changed (the excess shortfall was manufactured with pure water), and the added quantities of egg yolk lipoprotein shown in Table 7 were respectively manufactured and evaluated. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[0043]

[Table 7]

	Added quantity of egg yolk lipoprotein	Temporal change in texture
Inventive Product No. 17	1.0%	○
Inventive Product No. 18	1.5%	◎
Inventive Product No. 19	4.0%	◎
Inventive Product No. 20	6.0%	◎
Inventive Product No. 21	7.5%	◎
Inventive Product No. 22	8.0%	○

[0044]

From Table 7, it can be seen that if the added quantity of egg yolk lipoprotein is in the range of 1.5 – 7.5%, and the item is left for a long term, the light texture immediately after manufacturing can be maintained, and this is preferable. For each item, the flavor immediately after manufacturing was maintained.

[0045]

To examine temporal changes in the texture based on the quantity of added protein other than egg yolk lipoprotein causing acid denaturation at a pH of 3.0 – 5.0, the added quantities of the egg white protein in Embodiment 1 were changed (the excess shortfall was manufactured with pure water), and the added quantities of egg white protein shown in Table 8 were respectively manufactured and evaluated. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[0046]

[Table 8]

	Added quantity of egg yolk lipoprotein	Temporal change in texture
Inventive Product No. 23	0.15%	○
Inventive Product No. 24	0.2%	◎
Inventive Product No. 25	0.5%	◎
Inventive Product No. 26	0.8%	◎
Inventive Product No. 27	0.9%	○

[0047]

From Table 8, it can be seen that if the added quantity of egg white protein is in the range of 0.2 – 0.8%, and the item is left for a long term, the light texture immediately after manufacturing can be maintained, and this is preferable. For each item, the flavor immediately after manufacturing was maintained.

[[0048]

[Embodiment 9]

To examine the percentage of egg yolk lysophospholipoprotein in the egg yolk lipoprotein, the processing conditions of the phospholipase A in Embodiment 1 were changed, egg yolk liquids with the percentages of egg yolk lysophospholipoprotein shown in Table 9 were used, and these were respectively manufactured and evaluated. For the test, in the same manner as Test Example 1, these were maintained at room temperature for two months, and this along with a newly manufactured item were tested and evaluated. An item manufactured wherein nitrogen gas was not blown while deaerating was used as a negative contrast. The symbols in the table are the same as with Test Example 2.

[0049]

[Table 9]

	Percentage of egg yolk lysophospholipoprotein in the egg yolk lipoprotein	Temporal change in texture
Inventive Product No. 28	0%	○-2
Inventive Product No. 29	5%	◎-2
Inventive Product No. 30	10%	◎-1
Inventive Product No. 31	40%	◎-1

Inventive Product No. 32	80%	◎-1
Inventive Product No. 32	100%	◎-1

[0050]

Note 1: Symbols in tables

◎-1: Light texture maintained before and after preservation

◎-2: Somewhat light texture maintained before and after preservation

○-1: The light texture before preservation changes slightly after preservation, but this is not problematic

○-2: The somewhat light texture before preservation changes slightly after preservation, but this is not problematic

△: There is a light texture before preservation, but after preservation this changes to a somewhat light texture

×: Both before and after preservation, the texture is identical to that of the negative contrast

[0051]

Based on Table 9, it can be seen that it is preferable to use part or all of the egg yolk lipoprotein as an egg yolk lysophospholipoprotein, since the light texture directly after manufacturing can be maintained even when the item is left for a long term. Also, when an egg yolk lipoprotein wherein the percentage of lysophospholipoprotein is 10% by weight or more is used, a lighter texture directly after manufacturing can be maintained, and this is preferable because the light texture directly after manufacturing

can be maintained. Any of the preserved products maintain the flavor directly after manufacturing.

[0052]

As has been explained above, because the oil-in-water emulsified condiment containing bubbles of the present invention maintains the light texture and flavor directly after manufacturing over a long term, it is expected that this will further increase the demand for oil-in-water emulsified condiments.

Translations Branch
United States Patent and Trademark Office
April 13, 2009
Steven M. Spar